

# Cu-Hf (Copper-Hafnium)

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The Cu-Hf phase diagram in [Massalski2] was redrawn from [1988Sub]. However, [1991Oka] pointed out that the thermodynamic model adopted by [1988Sub] did not result in the phase diagram as shown by them. Apparently, as the assessed phase diagram, [1994Sub] accepted the Cu-Hf phase diagram that was calculated by [1991Oka] using thermodynamic parameters given by [1988Sub], although [1991Oka] is not quoted. According to [1991Oka], the thermodynamic parameters used by [1988Sub] were very unlikely because the calculated phase diagram included many unlikely features, e.g., only one phase is stable at room temperature.

Figure 1 shows the Cu-Hf phase diagram calculated by [2006Lia]. Problems in the thermodynamic model [1988Sub] and the phase diagram [1994Sub] were solved. Figure 2 is an enlargement of Fig. 1 on the Cu-rich end.

More recently, [2006Woo] concluded that  $\text{Cu}_{10}\text{Hf}_7$  melts peritectically at 1025 °C, not congruently, by a reaction  $\text{L} + \text{CuHf}_2 = \text{Cu}_{10}\text{Hf}_7$  based on thermal analysis, scanning electron microscopy, and X-ray microanalysis.

Accordingly, the thermodynamic model may require further refinement.

## References

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- 2006Lia:** D. Liang and Y. Liu, Reevaluation of the Cu-Hf Binary System, *J. Alloys Compd.*, 2006, **426**, p 101-105
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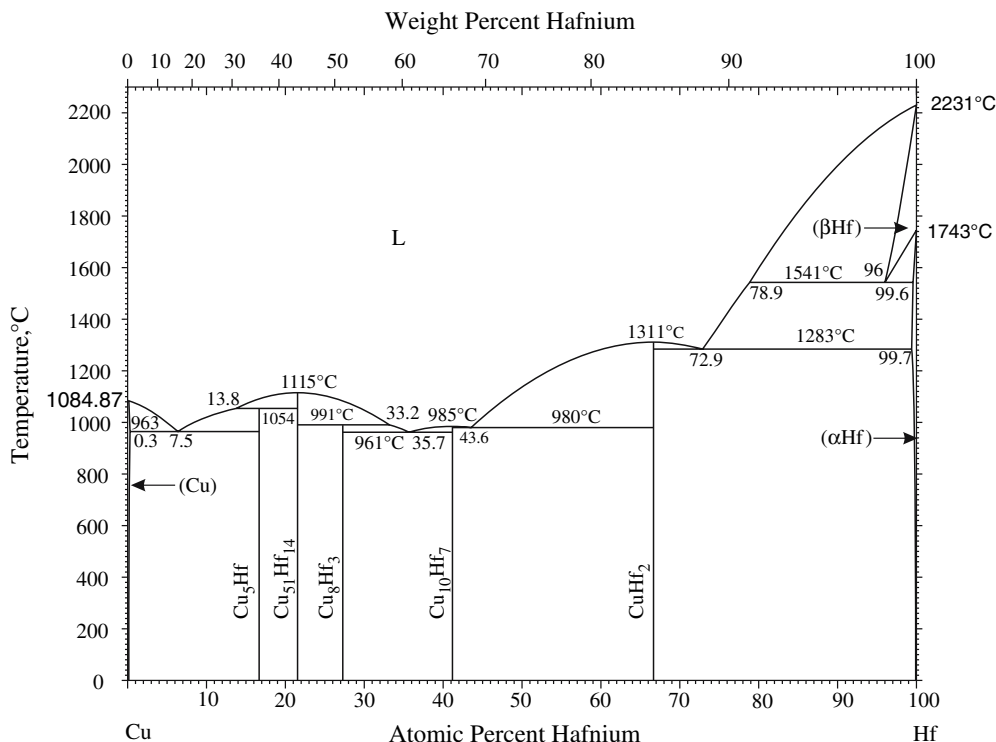
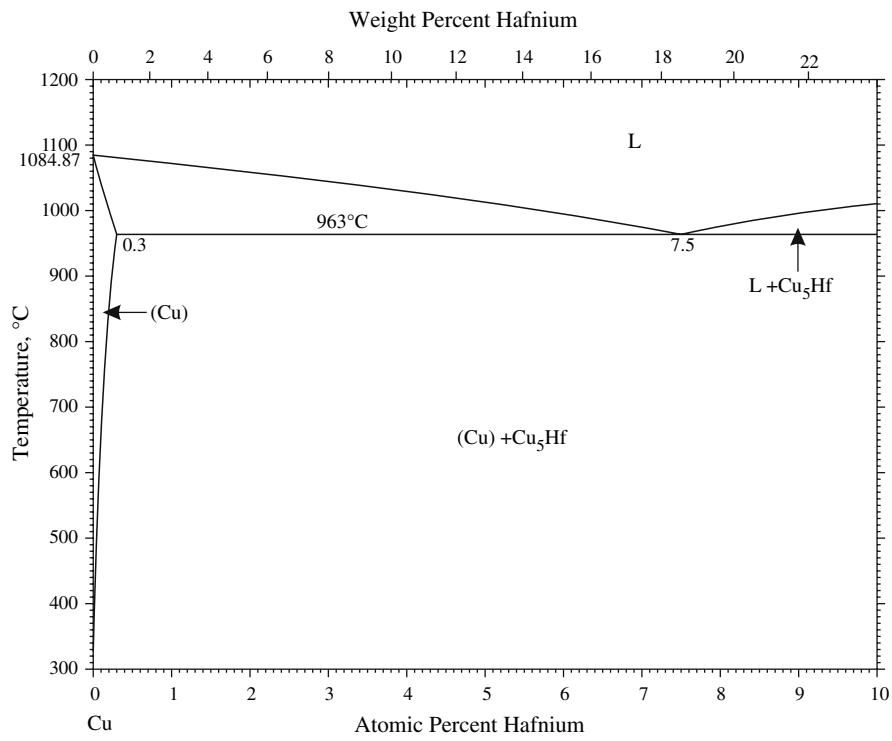


Fig. 1 Cu-Hf phase diagram

### Section III: Supplemental Literature Review



**Fig. 2** Cu-rich end of the Cu-Hf phase diagram